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THE RIZZOLI ORTHOPEDIC INSTITUTE IN BOLOGNA AND THE SCHOOL OF ANATOMICAL AND SURGICAL DRAWING

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UP to a century ago congenital defects, bone tuberculosis, osteomyelitis, and sequels of poliomyelitis and deficiency diseases resulted in a great number of deformities and disabilities. This difficult and unhappy problem was generously met in the Italian city of Bologna by the clinician and surgeon Francesco Rizzoli, who allotted his whole patrimony to the establishment of an institution for orthopedics.

Rizzoli's legacy permitted the purchase of a deserted and decaying monastery which once belonged to the Olivetan order. It is located on the hill of San Michele in Bosco, a lovely part of the city. This 11th century building, overlooking Bologna and surrounded by cypresses, horse chestnuts, cedars, and firs, contained valuable treasures of art and architecture, the greatest of which were paintings by Guido Reni, Caracci, Vasari, and others.

In 1896, after the necessary tasks of rearrangement and transformation were completed, the Rizzoli Institute was opened and started its new

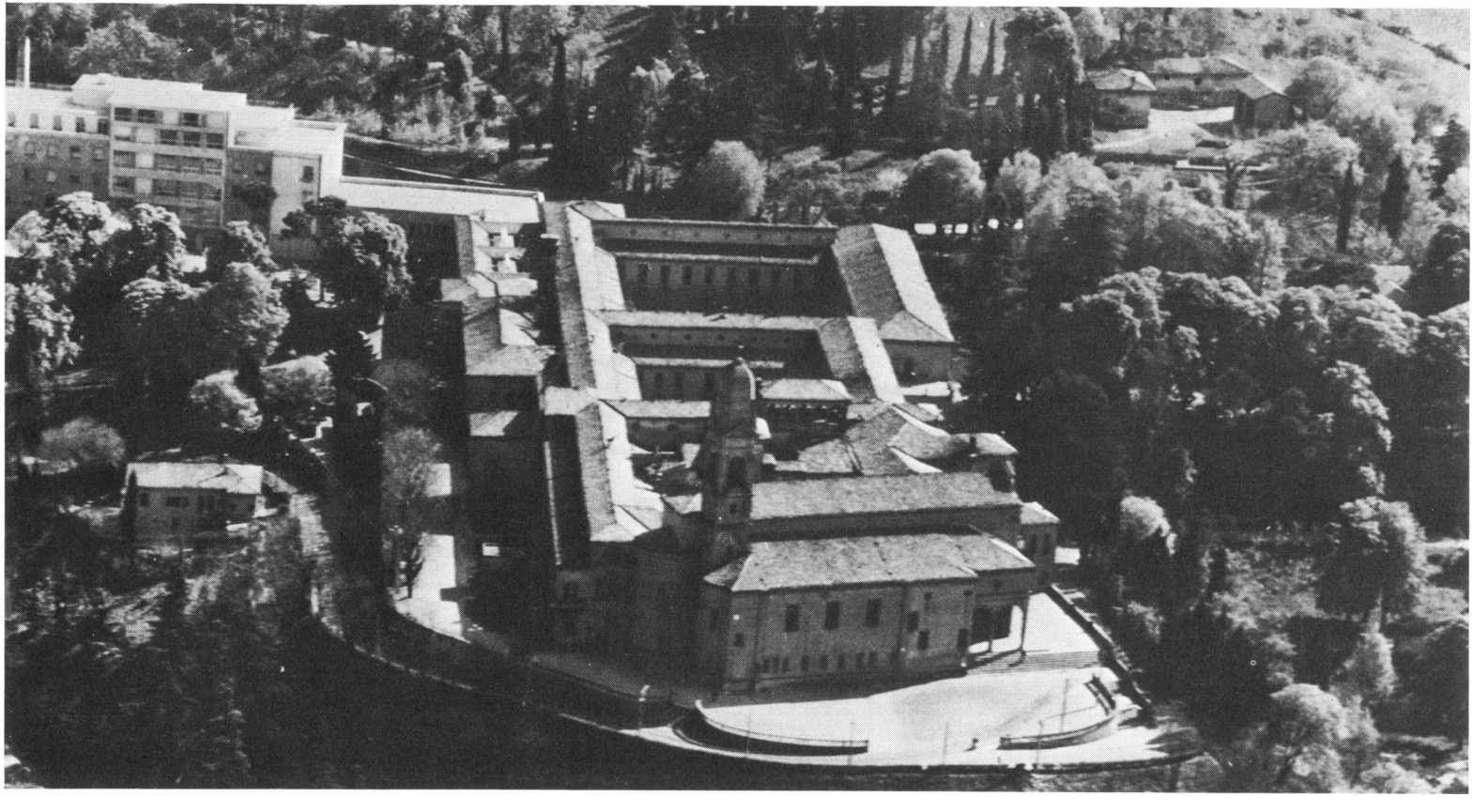

Fig. 1. The Rizzoli Orthopedic Institute in Bologna.

life as a special hospital for orthopedics and traumatology (Figures 1 and 2).

The success of this glorious institution is due to the following elements:

1) The spell exerted by the transformation of the building from a monastery and shelter of the Olivetan monks into a hospital for the disabled and crippled. Its environment, with peaceful cloisters and solemn galleries, is most unusual. Its historical scientific and artistic antiques are of the highest value. Its situation on the hill of San Michele in Bosco commands a wonderful view over the city, which is called "alma mater studiorum," the site of the first university in Europe.

2) The masters who contributed to its development and followed one another in a continuous line:

Alessandro Codivilla, whose name is connected with important innovations and discoveries, such as transarticular nailing, tendon grafts, tenodesis, syndesmotomies, and tenotomies for the surgical treatment of club foot, and treatment of bone tuberculosis. In Italy he is considered the founder of modern orthopedics.

Vittorio Putti gave the Institute a strong impulse, making it renowned all over the world. He founded the orthopedic workshop, which is now the most important in Europe, as well as the Istituti Elioterapici Codivilla-Putti in Cortina d'Ampezzo for the treatment of bone tuberculosis and accidents of winter sport. Putti was also the founder of the most important Italian orthopedic journal, *La Chirurgia degli Organi di Movimento*. He devoted himself in particular to the study of arthroplasty, sciatica, fractures of the spine, and the traumatology of peace and war. He was a humanist and a well-known scholar of medical history.

Francesco Delitala was a skillful surgeon and, like his forerunner, a man of letters and an artist. He made original contributions to the study of prosthetics, osteosynthesis, and recurrent dislocation of the shoulder. He described the pathological anatomy of the latter condition and suggested a successful surgical technique. He was the first in Italy to carry out careful investigations of prolapse of discs.

Raffaele Zanoli, a brilliant surgeon and organizer, was a founder of societies and medical journals. He contributed greatly to the study of bone tuberculosis, stiff neck, cerebral palsy, surgical treatment of coxarthrosis, muscle and tendon transplants, sequels of poliomyelitis, and

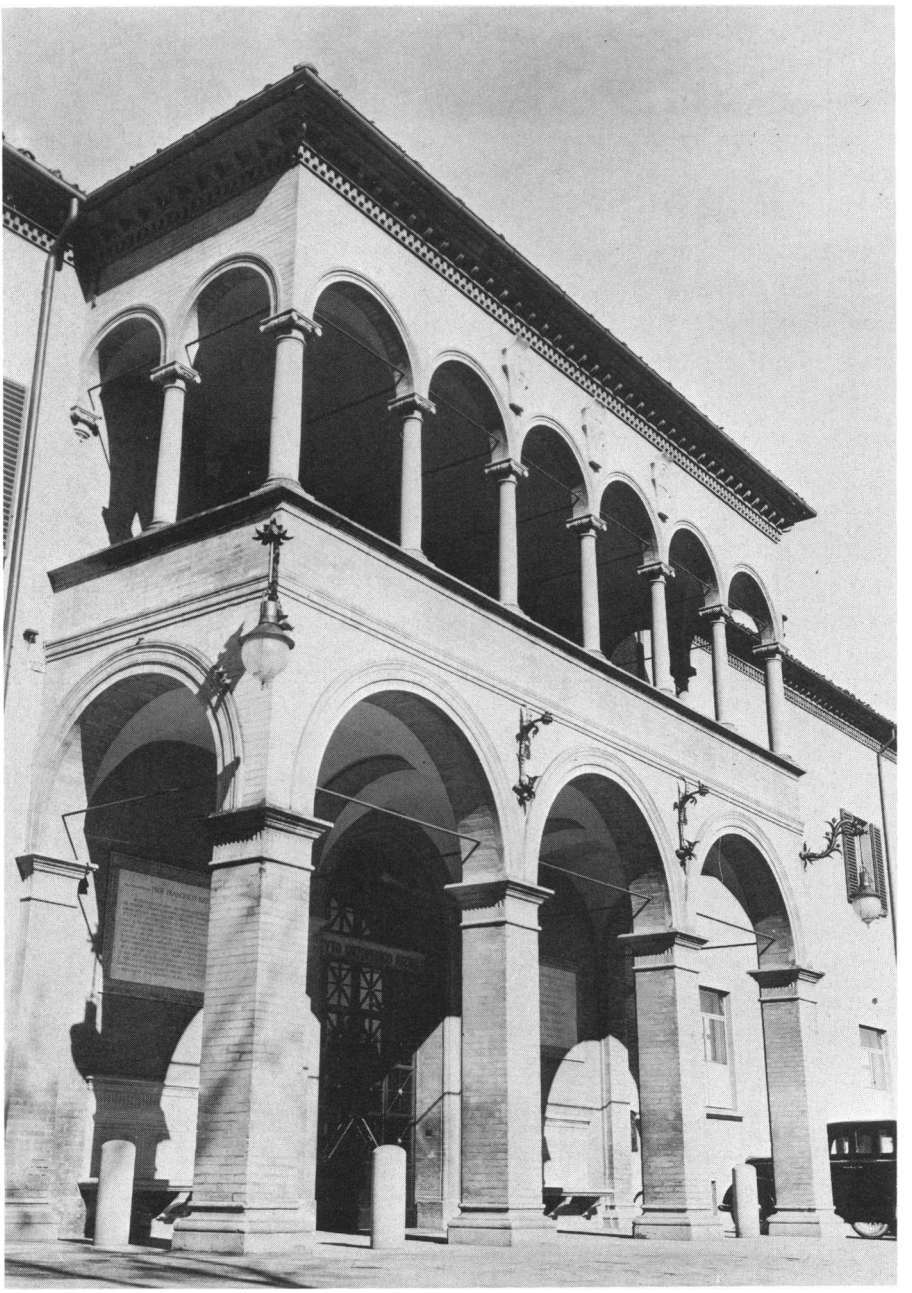

Fig. 2. Entrance of the Rizzoli Orthopedic Institute in Bologna.

congenital dislocation of the hip. In addition he conceived a number of new surgical procedures.

While retaining the chair at the University of Florence, Oscar Scaglietti was charged for one year with the teaching of orthopedics at Bologna. His gifts as organizer, surgeon, and expert in bone tumors, congenital dislocation of the hip, vertebral fractures, disk prolapse, and spinal neoplasms are well known.

The present writer is the sixth director (*"Ed io fui sesto tra cotanto senno,"* Dante Alighieri would say). He was a pupil of the Rizzoli school and for many years has held the chair of clinical orthopedics at the University of Pisa.

According to the present law the Institute is now divided into five departments, one of which is reserved for orthopedics and the traumatological surgery of children.

The director of the University Clinic is in charge of 120 beds. Besides the five orthopedic departments mentioned above and based on the hospital reform effected in Italy in 1971, the Rizzoli Institute includes the following sections:

The sanitary directorate
The section for physical therapy, functional re-education, and rehabilitation, including an autonomous ward
The emergency and casualty section
The section for anesthesia and reanimation
The section for radiology and radiotherapy
The section for clinical investigation
The section for internal medicine
The section for neurology

There is also a center for children with cerebral palsy (50 beds) and centers for research on tumors (director: Professor Mario Campanacci), and blood transfusion; two medical libraries, of which the Fondazione Vittorio Putti contains a great number of priceless ancient medical books, incunabula, rare instruments and documents of the past; an anatomical museum; and all the general services. A center devoted to the prevention and treatment of scoliosis and another for research and cure of rheumatic diseases in cooperation with the institutes of Cortina d'Ampezzo was made available recently.

3) The happy union of the hospital with the university was one of Codivilla's achievements. Codivilla understood clearly that the develop-

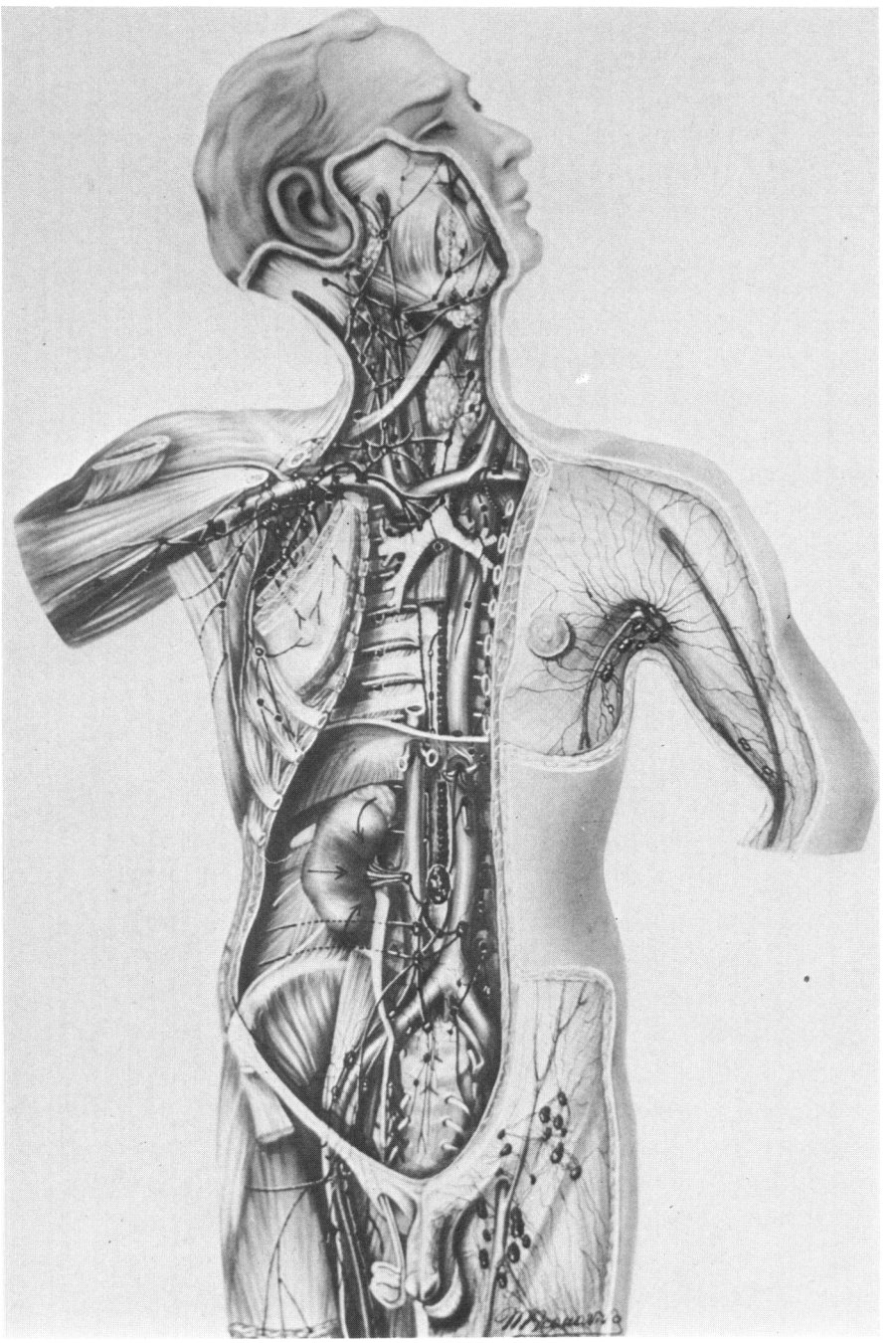

Fig. 3. A drawing of the lymphatic circulation. An example of work done at the School of Anatomical and Surgical Drawing.

ment and progress of the Rizzoli Institute depended not only on the care of patients but also on teaching, research, and scientific activity. In fact the agreement between university and hospital resulted in increased scientific progress by the Institute, which has always been considered as a bright light in orthopedics.

The Bolognese school of orthopedics proceeded from Alessandro Codivilla, Vittorio Putti, Francesco Delitala, Raffaele Zanoli, Oscar Scaglietti, and Mario Paltrinieri and has spread all over Italy. The pupils have now become masters and surgeons-in-chief in their turn. Thus the school has reached a high scientific standard both at home and abroad.

The pedagogic activity of the Istituto Rizzoli includes four courses for undergraduates, four schools for specialization directly dependent on or controlled by the university (schools for orthopedics and traumatology, orthopedic physiokinesitherapy, orthopedic techniques, and anatomical and surgical drawing) and many additional courses for hospital technicians.

The School of Anatomical and Surgical Drawing

The school of anatomical and surgical drawing is one of the few in Europe and is supported by the university orthopedic clinic. It was planned by Vittorio Putti and developed by Raffaele Zanoli as a course of university specialization.

In the 15th and 16th centuries Leonardo da Vinci accomplished the full integration of artistic spirit with scientific speculation. Art and science are the tools necessary to the achievement of natural knowledge, in particular that of man, by deep penetration into structure through direct study of the different organs and systems, especially the locomotor apparatus.

Anatomical drawing originates from Leonardo. Its most important subsequent representatives included Andrea Vesalio, Berengario da Carpi, Antonio Scarpa, Paolo Mascagni, and Gaspare Tagliacozzi.

The tradition of anatomical drawing developed in Bologna about 1800. The artists, under the anatomist's directions, brought the intimate knowledge of the human body to perfection and gave relief to its lines, proportions and colors while integrating art with science and anatomy with draughtsmanship.

Remo Scoto was educated in this environment. In 1924 he was in-

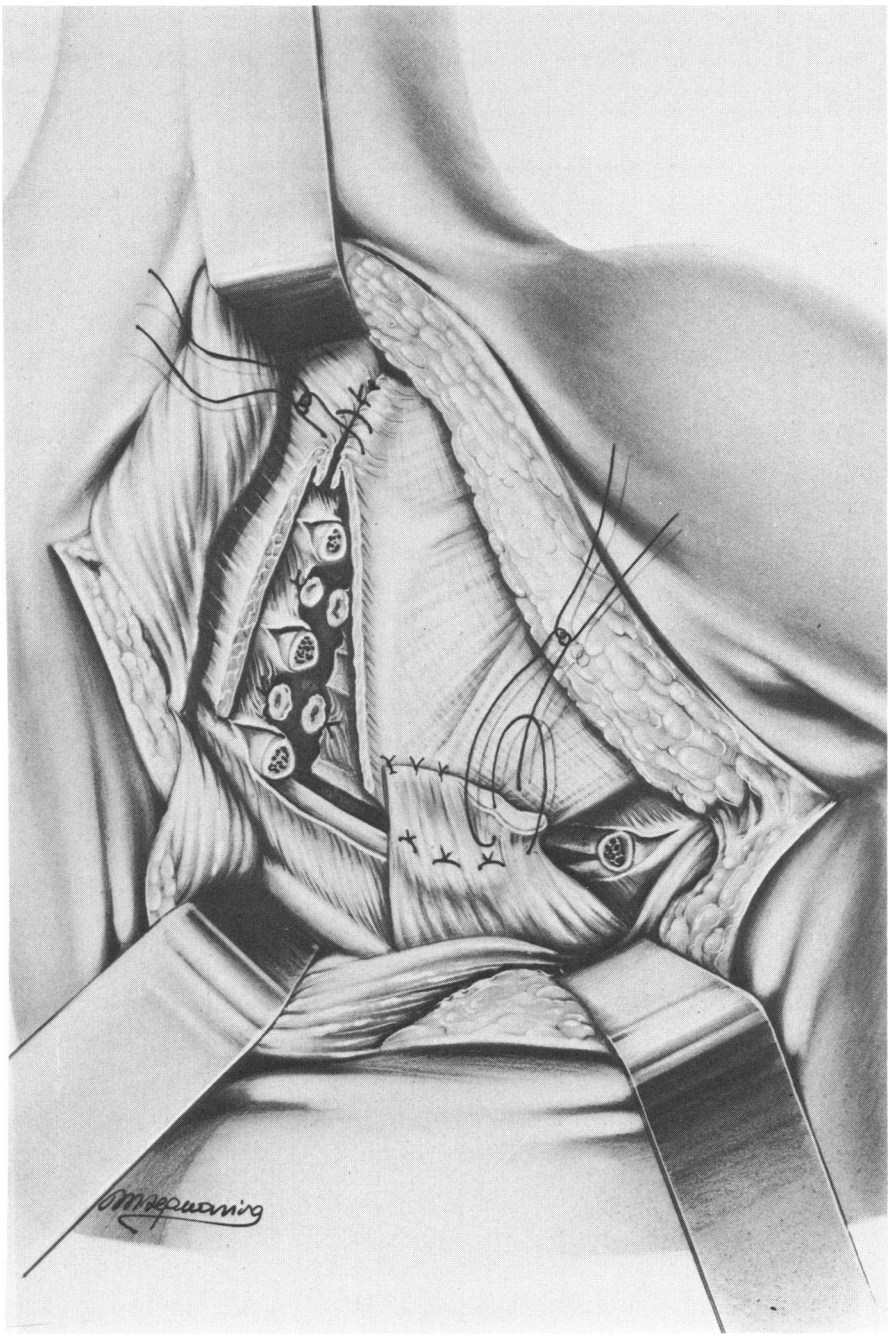

Fig. 4. Thoracotomy. An example of work done at the School of Anatomical and Surgical Drawing.

vited by Vittorio Putti, then director of the Istituto Ortopedico Rizzoli, to enter the operating theater in order to translate the work of the surgeon into drawings. He soon became an expert and a leader in his field, and his work was requested by many anatomists and surgeons. At his death he was succeeded by his pupil, Professor Maria Acquaviva, who is as keen on her work and as qualified as her teacher, and who is continuing the tradition of the school. The two-year course is part of the medical faculty of Bologna University and is under the direction of the head of the orthopedic university clinic, Professor Mario Paltrinieri. This school aims at supplying the students with scientific and artistic preparation, a necessary training for the representation of the human form either in static or dynamic postures. Students must also be present at surgical operations in order to be able to draw the more important stages in the living patient.

The subjects of instruction are as follows:

1) First year: normal human anatomy, comparative anatomy, origin and historical development of anatomical art, and normal anatomical drawing.

2) Second year: pathologic anatomy, topographic surgical and radiological anatomy, elements of surgical pathology and operative technique, surgical drawing, anatomical and histopathological drawing.

Despite the enormous diffusion of black-and-white and color photography and the different technical devices used in explanations in books, the work of the draughtsman has not disappeared. Whereas a photograph is often the harsh and inexpressive reproduction of cold reality, the anatomical, surgical, and anatomopathological drawing (see Figures 3 and 4) enlivens reality, explaining in a structural and scientific way what only the hand of man, with its own personality and sensitivity, can do, and harmoniously merging art and science.